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10/037,009	12/21/2001	Manoj Ajbani	DN2001233	5685

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Patent & Trademark Department - D/823  
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EXAMINER

WYROZEBSKI LEE, KATARZYNA I

ART UNIT PAPER NUMBER

1714

DATE MAILED: 09/30/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/037,009

Applicant(s)

AJBANI ET AL.

Examiner

Katarzyna Wyrozewski Lee

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-10 and 14-20 is/are rejected.
- 7) ☒ Claim(s) 11-13 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 0302.
- 4) ☐ Interview Summary (PTO-413) Paper No(s) \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

### ***Claim Objections***

1. Claims 12 and 13 are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. In the instant case claim 1 recites that the elastomer utilized in the invention is a copolymer of at least one of isoprene and butadiene and copolymers of styrene with at least one of butadiene or isoprene. Claims 12 and 13 recite polyisoprene and polybutadiene, which are not copolymers but homopolymers.

2. Claim 7 is objected to because of the following informalities: Term hydroxide is misspelled in claim 7, line 4. Appropriate correction is required.

### ***Claim Rejections - 35 USC § 102***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

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4. Claims 1-6, 15, 18-20 are rejected under 35 U.S.C. 102(b) as being anticipated by ELSPASS (US 5,883,173).

ELSPASS discloses composition for rubber nanocomposites, which are utilized in tire industry (col. 5, lines 21-24).

According to the prior art of ELSPASS, rubber nanocomposites are formed by polymerizing rubber monomers or pre-polymers in presence of clay and thereby exfoliating clay into single platelets. The rubber is based on monomer such as butadiene, isoprene, styrene, and natural rubber, wherein most of the examples disclose styrene butadiene elastomer. The polymers of ELSPASS contain 0.01-900 miliequivalents of functional groups (col. 4, lines 44-62), wherein functional groups include ammonium salts and carboxyl containing groups such as acrylates. When polymerized, the number average molecular weight of the polymers is in a range of 5,000-15,000 g/mole (col. 3, lines 60-65). Said rubber is then suitable for vulcanization. The glass transition of the rubber of ELSPASS is in a range of -50-100°C (col. 4, lines 1-2).

The clay component of the composition of ELSPASS is smectite clay such as montmorillonite, vermiculite and the like (col. 2, line 62-col. 3, line 3). Clay before addition of monomers is modified with surfactants such as those having ammonium functional group (col. 3, lines 10-15). Example 1 recites dodecyl trimethyl ammonium chloride. The cationic monomer such as the one utilized in example 1 undergoes ion exchange with otherwise naturally occurring in clay ions such as sodium or potassium.

With respect to the pH of the composition, it should be pointed out that if water as natural liquid has pH of approximately 7.5, anything basic will have pH anywhere between 7.5 and

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addition of any basic compounds would render pH even higher. In the examples of the prior art of ELSPASS additives are basic, therefore the pH of the dispersion is above 7.5.

***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

7. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later

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invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

8. Claims 7, 8, 14, 16, 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over ELSPASS (US 5,883,173) in view of KRESGE (US 5,576,372).

The discussion of the disclosure of the prior art of ELSPASS from paragraph 4 of this office action is incorporated here by reference. In addition, it should be pointed out that the latex of ELSPASS as shown in examples is mostly aqueous latex with small amounts of basic additives, therefore it would be reasonable to assume, that the pH of the latex is close to that of water.

Also, although the prior art of ELSPASS does not specifically name the ammonium compounds of claims 7 and 8, these are functional equivalent of the ammonium compound disclosed in the prior art of ELSPASS.

The difference between the present invention and the disclosure of the prior art of ELSPASS is otherwise obvious presence of rubber blends and reinforcing additives utilized in tires.

With respect to the above differences the prior art of KRESGE also discloses rubber nanocomposite utilized in making of tire inner liners.

The rubber of KRESGE is rubber blend, that contains reactive rubber that is modified with molecule containing ammonium compound (col. 3 and 4) and solid rubber selected from polybutadiene, polyisoprene, SBR and copolymers (col. 4, lines 32-41).

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In addition to clay, the composition of KRESGE discloses use of reinforcing filler of carbon black (col. 4, lines 53-60).

Use of otherwise auxiliary additives such as additional rubbers and reinforcing additives such as carbon blacks makes tires what they are today, by altering composition's physical properties.

In the light of the above disclosure, it would have been obvious to one having ordinary skill in the art at the time of the instant invention to utilize additional rubber and reinforcing additives of KRESGE in the composition of ELSPASS and thereby obtain the claimed invention. Addition of reinforcing agent reinforces rubber composition an addition of more than one rubber influences viscosity of the composition (col. 3, lines 25-40).

9. Claims 9, 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over ELSPASS (US 5,883,173) in view of USUKI (EP 1,029,823).

The discussion of the disclosure of the prior art of ELSPASS from paragraph 4 of this office action is incorporated here by reference.

The difference between the present invention and the disclosure of the prior art of ELSPASS is recitation of further acid groups that can be utilized to modify rubber of the nanocomposite.

With respect to the above difference, the prior art of USUKI discloses clay/rubber nanocomposite material and process for making them. Besides of already discussed clay and rubber, the prior art of USUKI utilizes something called a guest molecule (Abstract).

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According to the prior art of USUKI, guest molecule can be a rubber such as polyisoprene or polybutadiene, which contains polar group [0034, 0074]. The polar groups of USUKI include carboxylic acid groups [0028] hydroxyl group, anhydride acid group, epoxy or amino groups wherein the amino groups are primary, secondary or tertiary. Although the prior art of USUKI does not specifically name acids of the claim 9 of the present invention it names what is functionally equivalent.

*Allowable Subject Matter*

3. Claims 11-13 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The prior art found during the updates search does not provide for epoxidized rubber that is modified with secondary or primary amine or with ammonium salt.

During search the examiner found a PCT publication WO 02/100923 to DIAS, which although applicable against present claims does not qualify as a prior art.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Katarzyna Wyrozebski Lee whose telephone number is (703) 306-5875. The examiner can normally be reached on Mon-Thurs 6:30 AM-4:00 PM.



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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vasu Jagannathan can be reached on (703) 306-2777. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

*Katarzyna Wyrzebski*  
KIWL  
September 24, 2003